Canadian Centre for Occupational Health and Safety

Centre canadien d'hygiène et de sécurité au travail

Workshop on Workplace Back Injuries

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Canadian Centre
for Occupational Health
and Safety

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WORKSHOP ON WORKPLACE BACK INJURIES

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Summary

Back injuries account for the largest percentage of compensable work injuries; it is estimated that as many are not reported. A workshop was held by CCOHS on November 12 and 13, 1987 to heighten awareness of the problem and to discuss a way forward.

The workshop was attended by 50 representatives of labour, management, and professionals. Several companies were represented by both management and labour; the professional group included nurses, physicians, ergonomists, engineers, trainers, physiotherapists, biomechanists, and fitness consultants.

Members of the opening panel were: Dr Robert Webb, Chairman, National Research Council Associate Committee on Ergonomics; Dr Geoffrey Wright, Ontario Ministry of Labour; Dr Walter Spitzer, McGill University, representing the Institut de recherche en santé et en sécurité du travail du Quebec (IRSST); Dr Linda Murray, Chicago Department of Health, representing labour; and Mr Russ Gurman, Director, Occupational Health and Safety, Hamilton General Hospital, representing management. Chester Waxman, President of I Waxman Industries and Chairman of the Board of Governors of Hamilton Civic Hospitals, was unavoidably away from the country and unable to participate on the panel; substituting for him, Russ Gurman ably described the experience at the Hamilton Civic Hospitals.

After tripartite discussions on the scope of the problem and pre-selection; job design and workplace design; prevention, training, and elimination or limitation of hazards; the participants met in homogeneous groups of management, labour, and professionals to formulate conclusions and recommendations.

For the first time in a CCOHS workshop, there was a francophone/bilingual discussion group; this functioned so well under the capable chairmanship of Robert Bouchard, Directeur, Service santé & sécurité du travail, Fédération des travailleurs et travailleuses du Quebec, that the one completely unilingual francophone participant said she was able to **fully** participate. Other group chairmen were Colin Lambert, National Director, Health and Safety, Canadian Union of Public Employees (who actively helped in planning the workshop); Gwenn Roberts, Occupational Physiotherapist Consultant, Health Care Occupational Health and Safety Association; and Paul Gray, Risk, Safety & Regulatory Affairs Manager, Atomic Energy of Canada Limited.

Reporting at the final plenary session, management, professionals, and labour said they had reached "a remarkable degree of agreement"—a remark that has been heard at every one of the Centre's workshops.

Summary
continued

Major areas of agreement were:

- The scope of the problem is enormous and underreported and present programs for back injuries are inadequate.
- Emphasis must be on fitting the work design to the job to be done and to the people doing it.
- Design must be a joint labour-management effort, with assistance and advice from multi-disciplinary professional teams.
- There is little justification for pre-selection testing unless it is to improve job design, to identify poor design, or to assist in modifying jobs.
- All efforts should be prevention-oriented and job-specific.
- There was a strong call for job design to be incorporated into curricula for professions ranging from engineering to business.

Other points:

- Labour strongly emphasized the need for legislation to eliminate hazards; professionals supported the thrust; management considered it less important, but was not opposed.
- There was a suggestion that CCOHS should be requested to hold a workshop on Modified Work for Injured Workers.

Welcome and introductions

Gordon Atherley

I am the President and Chief Executive Officer of the Canadian Centre for Occupational Health and Safety. My job here is to welcome you and to briefly describe the Centre and the workshop process.

The Centre is a creation of the federal government and is funded by it. It is not part of the federal government in that it is governed by the representatives of employers, labour and of the federal, provincial and territorial governments. It is the policies of that tripartite Council which we the staff carry through.

One of the very first decisions that the tripartite Council made in 1979 was that information service was profoundly important and gaining more importance. It was a very farsighted policy decision to position us in the information field, whose importance is evident in health and safety developments such as WHMIS. As our work of giving out facts and interpreting them developed, it became clear that there was something else. Professionals and scientific staff of the Centre could give out facts and interpret them, but we found that there were problems, questions and issues which needed something more—the opinions and judgments of thoughtful people who carefully considered the problems and the questions. That is the essence of the workshop. It is to give you an opportunity to discuss, to think about, to weigh, to judge and to come forward with what you think about very difficult problems—this time that of back injuries in the workplace.

Other workshops we have held were on Occupational Medicine, Medical Surveillance and Human Rights: The Way Forward; Training and Education in Chemical Information; Drug Testing in the Workplace; and more to come. At all of them have been groups of people exactly like you; in fact, some of you are repeaters, I am pleased to say. Through the workshop process have come conclusions about things which can be agreed on, a consensus, but there has been no fear of defining areas of disagreement.

Out of the discussions comes a document, the proceedings. The Centre puts print on paper, but the document is the participants'. The document has no force of law, but it does acquire the weight of authority because it is the product of the discussions of thoughtful people.

The Drug Testing in the Workplace Workshop produced a statement by the participants that has attracted a great deal of attention. The group instructed the staff to send the document to all the Ministers and Deputy-Ministers in Canada concerned with occupational health and safety. Ministers have taken it seriously.

Gordon Atherley *continued*

In the specialized press, a lot of attention was paid to it—not because it came from the Canadian Centre, but because it came from a group such as this one.

The document that you are going to produce has the potential to achieve the same kind of effect. We call this adding value to information; you are adding the value.

Anybody can request a workshop. This one was requested by the labour Governors on the Council of Governors and the Council agreed completely. It didn't have to be a group of Governors, it could have been any individual in society. Some of you here today are working with us on future workshops.

If the process works well, you will be surprised at the degree of agreement that there is among you. You will also identify things which you do not agree on and you will find that the process respects these differences of opinion. You should find the document something which you can use for all kinds of purposes: to influence employers, government, labour unions, and the various associations that are concerned with occupational health and safety, and to get better public awareness of the problem. This document that you participated in, that is your creation, will carry the collective weight of the group.

Lillian Vine is in charge of organizing the workshop process at the Centre. She is going to introduce the panelists and take you through the various steps of the process.

Tomorrow will be the feedback session. You will have already noticed the audacity of the Canadian Centre for Occupational Health and Safety: you are here to do the work and we are charging you for the privilege. This is one of the few organizations in Canada that would dare do this. I would invite you at the end of the workshop to make comments about the workshop process and about the Centre because I take this feedback very seriously. I am confident you will feel good about the process, but you may wish to suggest ways in which we could improve it. Thank you very much. Bon succès.

Introduction of panelists

Lillian Vine

Merci, Gordon. Moi aussi je veux vous souhaiter la bienvenue à cet atelier. C'est le quatrième atelier du Centre et avec chacun, je suis convaincue que mon travail est le meilleur "job" qu'il y ait au Centre.

Lillian Vine *continued*

Not only do we have the unmitigated gall of charging you to do the work; those of you asked to be work group chairmen were here to meet with us last night.

The framework for the workshop is developed with the requesters. I want to thank Colin Lambert who worked very hard with me to develop what we think and what the chairmen in their meeting last night found to be a very good framework with a lot of scope for discussion.

We are privileged to have a very fine panel. I am going to introduce them much more briefly than they deserve, before each speaks.

Dr Robert Webb has a BSc in Psychology and PhD in Environmental Science. He is the former director of the Ergonomics Unit at the School of Human Biology at the University of Guelph. He has considerable experience in teaching and in researching ergonomics. He is currently the President of Human Systems Incorporated, a consulting group specializing in applied ergonomics. He is Chairman of the National Research Council Associate Committee on Ergonomics. He is also, along with Gary Cwitco of the Communication Workers' Union, the requester of a workshop on Workplace Repetitive Strain Injuries which we will hold in Hamilton on March 28 and 29.

Panel presentations

Dr Robert Webb

I am here largely to represent the National Research Council's Associate Committee on Ergonomics. Associate Committees are formed to provide the NRC with specialist and policy advice in different areas of scientific effort of particular national concern. The members of an Associate Committee usually come from outside the NRC to provide a fresh and comprehensive perspective. There are at the moment over 20 Associate Committees with interests ranging from Soil Erosion to Instructional Technology to Ergonomics.

A special interest of the Committee on Ergonomics is the failure of Canadian business and industry to apply existing ergonomic research and techniques on a wide scale. A good case in point is the prevention of back injuries.

Although many people think of it in terms of office seating, ergonomics originated during the Second World War to overcome performance failures due to human error in new high-tech defence systems. Because of its success, ergonomics is now routinely applied in the design and development of most military and

Dr Robert Webb *continued*

aerospace systems. Industrial applications of ergonomics are increasing in response to the need to improve the quality of working life and occupational health and safety as well as the productive use of human resources.

Ergonomics is the systematic application of scientific knowledge about the physical, psychological and social attributes of human beings in the design and use of all the things which affect a persons's work conditions: equipment and machinery, work environment and workspace, the job itself, the organization of work and training. In plain language, this means designing the job to fit the people who have to do it.

Ergonomics translates the basic knowledge about human function and structure (the way we sense and use information, the way we think and learn, differences in size and shape, strength and endurance, and more) into design criteria for optimizing working conditions. In ergonomically designed tasks and workplaces, people will tire less quickly, be less distracted by discomfort and ambiguity, less muddled by confusing displays and instructions, less bored by monotony, less frustrated by inconvenience, less stressed by environmental conditions and physical work demands. In short, they will be able to work more effectively, make fewer errors, feel less stressed, and subjected to less risk of illness and injury.

The role of ergonomics within the systems design context is to ensure that task demands match the abilities of the person performing the work. The foundation for this is a detailed analysis of existing or anticipated demands using a range of observational and simulation techniques and the application of relevant life and behavioral science data to the issues that arise.

Although priorities vary, three strategies can be combined to ensure the best fit between task demands and user characteristics. These are the design of equipment and workplace layout, improvement of skill and knowledge through learning (training), and placement of people in accordance with their abilities and preferences. It is important to note that while the balance between design, placement and training may vary from case to case, it is difficult to imagine a situation in which, implicitly or explicitly, some aspect of each strategy will not be present.

Conventionally, physical design changes are given the first priority but because economic and technological constraints usually limit the range of people with which any design can cope, placement and/or training will always be present. The role of training is to bring the skills of individuals within the range of the design criteria. The role of placement is to ensure selection of the best person

Dr Robert Webb *continued*

for the job, the best job for the person or, for unavoidably dangerous work, to screen out people who will be vulnerable. It is also important to note that the balance can be changed as priorities change. Emerging human rights legislation as well as more stringent health and safety regulations are changing the perception of what constitutes an appropriate balance between these strategies.

Depending on the industry, between 25 and 50% of all compensation claims are typically associated with an overexertion injury to the back. A closer look at the pattern of claims will reveal that this is only the tip of the iceberg. When all injuries associated with manual materials handling are taken into account (pushing, pulling, carrying and repetitive manipulation) whether to the back or another part of the body, an even more serious picture emerges.

The solution is not to attack the problem in a piecemeal manner by focusing narrowly on injuries to the back, or hand injuries, or crushing injuries resulting from objects dropped during the lifting process. Rather the solution lies in taking a fundamentally different approach to the design of work and the objects to be handled. We should be taking just as much care with the design of work for people as we take with the design of work for complex machines like robots.

When a robot is put into a place, there is certain to be a design engineer, installation engineer, maintenance engineer; everything is within its reach; its performance is monitored to make certain it isn't wearing out too fast, it is not consuming too much energy. In one industry, when four robots were being tried, they were known as Mork and Mindy, Laverne and Shirley; the manager had scheduled into his diary a weekly visit to inquire into the well-being and performance of Mork and Mindy, Laverne and Shirley—and he was responsible for 10,000 human beings!

To take a simple example. Most palletized boxes in the food industry have to be handled at least twice. Once when the box is taken from its pallet in the central warehouse to be sent to the satellite supermarket and again when the box is taken from the delivery truck at the supermarket and its contents placed on the shelves ready for the customer. In the central warehouse, handling rates may be as high as 2000 boxes each day. Considering only the design of the boxes themselves (box weight, box dimensions, handholds, and label information about the overall lifting weight) more often than not these features fall well outside ergonomic design guidelines. Taking into account repetitive rates, reach, lift height and other factors, this means that lift weights routinely exceed guidelines; dropped loads are more likely because of the

Dr Robert Webb *continued*

absence of handholds; lines of vision are obscured while carrying loads; slips and falls are more likely; and that inexperienced people are forced to learn by trial and error.

Very small changes can result in considerable differences (positive or negative) in the stress of the lifting task. It has been suggested that at least 30% of manual handling injuries could be eliminated by appropriate design of the object to be lifted and the characteristics of the lifting task, especially if combined with an effective training and selection policy. Handles on boxes are appearing for certain products, most commonly delicate products such as electronic equipment, or fragile materials. Cynics might suggest that the concern is more with damage to the materials contained within the box than with the potential damage to the person doing the lifting.

At the moment, most expectations for prevention of musculoskeletal injury are placed on the commonsense of the handler backed by some superficial training. More often than not this training is by means of posters advocating the straight back and bent legs lifting technique and little else. Yet such advice is of little value to people for whom the load is too large or the workspace too constricted to allow them to adopt the recommended postures. Consider also that few of us have the lower leg strength to lift both upper body weight and a heavy load two or three times each minute throughout the working week.

The message the Associate Committee would like to leave for discussants to consider is that, one way or another, the information and techniques that ergonomics has to offer should be far more widely applied to manual handling jobs. Our hope is that this application should come as a result of the perceived benefits in terms of reduced lost time, less product damage, less double handling, and a lower injury rate. Our experience suggests that the motivation may have to come from federal or provincial regulation and accompanying sanctions to govern the design of packaging, products and the circumstances of manual materials handling jobs.

Lillian Vine

The next name you see on your agenda is Chester Waxman. As the speaker comes to the podium, you will notice that he does not hold a very large cigar—it is obviously not Chester Waxman. Chester is the President of his own company—I Waxman Industries, a very large scrap metal company; he is also the Chairman of the Hamilton Civic Hospitals. We felt he was an ideal person to speak as an employer of two large and diverse workforces. Some months ago, he enthusiastically agreed to take

Lillian Vine *continued*

part in this workshop; unfortunately, he was called out of the country just a few days ago. In his place is Russ Gurman.

Russ Gurman is the Manager, Workers' Compensation/ Occupational Health and Safety for the Hamilton Civic Hospitals (the Henderson Hospital and Hamilton General Hospital). The Hamilton General Hospital in particular has several regional responsibilities which put a lot of pressure on a lot of people's backs. It's the multiple trauma centre, the burn centre, and it's also responsible for open heart surgery. That means many patients need a lot of care and that obviously has an effect on back injuries. Russ has a great deal of experience in this field, and in many health and safety organizations; I am delighted he is with us today.

Russ Gurman

I am primarily speaking on behalf of the Hamilton Civic Hospitals from an employer's point of view, not as a safety professional.

The Hamilton General Hospital goes back to 1883, on the same location at Barton and Victoria Streets. In early 1986, we started a massive rebuilding of the Hamilton General. At the same time, we are introducing, in 1987-88, a massive rebuilding and reorganization of the Henderson General Hospital.

We have a total of some 3,700 employees, 60 per cent of them in the nursing area. When we look at injuries in the nursing area over the last number of years, we find back injuries the leading cause of lost time. I think in the past the emphasis has been on the spinal type of injuries; in health care, we are finding soft tissue muscular tears of the upper back, shoulders and neck area, more predominant then lower back problems.

As an employer, in the last six years we have lost more than 5,000 work days. We are averaging in excess of 123 lost time injuries per year. This is a major concern in itself, without taking into account the cost. We can look at means and methods of reducing these types of injuries, but it's very difficult in health care—we are dealing with patients, patients' reactions and attitudes. We have a task force, established in 1986, to look at education and training of our nursing staff to make sure that they are able to deal with the patients they are caring for.

With some effort we can look at partial mechanization of the workplace. In 1988, we are advocating a massive change for our physiotherapy department to be involved with training of our staff. We hope our ergonomics group can do evaluations of the workplace so we can evaluate where the injuries are occurring, why are they occurring, and what positive action can be taken.

Russ Gurman *continued*

As an employer, we also have to look at our compensation costs. At the Hamilton Civics, we are paying over $1.5 million a year on Workers' Compensation. We realize that the $1.5 million is only the tip of the iceberg. Indirect cost to employers is skyrocketing—at the Civics we forecast the indirect cost will be close to $5 million per year; this includes replacement of staff, training of staff and replacement of equipment.

The concept of trying to reduce injuries is very important, but I believe there is also emphasis required by employers to assist injured workers back into the workforce. We have developed rehabilitation concepts where we are trying to assist injured workers with a history of back problems who have been off work for a period of time. There are employees that have been off work for three to four years, unable to come back to work because of back injuries. The focus by employers must be, "What can we do to assist these workers back?" By addressing this question we are finding that modified work is growing throughout the operations at the Hamilton Civics. In looking at rehabilitation, we are also able to design the work areas to reduce future injuries on the back.

We are working with labour in addressing the best means of getting people back to work. We have three labour groups within the Hamilton Civics. Although we have difficulty transferring employees into modified jobs because of the language of the contracts, there is a trend developing that we can sit down with labour and satisfy the needs we both have to get employees back into the workforce.

I hope in this workshop in the next day and a half, we can look at concerns of labour, employers and professionals. And that we can look for viable methods and make useful recommendations which we can all use in our organization.

Lillian Vine

Dr Geoffrey Wright obtained all his academic training at the University of Toronto. He has a Bachelor of Applied Science in Industrial Engineering, a Master of Applied Science in Human Factors Engineering, and a PhD in Ergonomics from the Faculty of Medicine. He worked at the Defence and Civil Institute of Environmental Medicine as Research Scientist, where he investigated human performance capabilities of divers working in a hyperbaric environment, and the life support requirements of air crews exposed to extremely low atmospheric pressures.

He joined the Ontario Ministry of Labour as Chief, Safety Studies Service, and developed the Ministry's capabilities in ergonomics.

Lillian Vine *continued*

The position which he now holds is Director, Special Studies and Services Branch, Ontario Ministry of Labour.

Dr Wright is past President of the Human Factors Association of Canada/Association canadienne d'ergonomie. He served as a member, and in 1984 Chairman, of the Ontario Council of Safety Associations' Task Force on Backs.

Dr Geoffrey Wright

It is certainly a pleasure to be here today to address a topic which, in some ways, is amusing for an ergonomist to be addressing. It is one with which I had some familiarity, but hadn't looked at with the same depth until I was asked to speak on pre-selection tests.

I was asked to look at the categories of pre-selection tests, what kind of tests are used, how predictive the tests are, and how preventive they are. I found it a very interesting task because it showed that there are some aspects to selection where an ergonomic perspective is useful, and illustrated other areas where ergonomics has benefited from some of the developments.

Screening tests

Before one uses a screening test, one should know certain things about it.

Accuracy - One of the important characteristics of the screening test, of course, is accuracy; that is, a screening test's ability to measure a particular quantity or quality.

Sensitivity - The sensitivity of a test is very important because it's going to let you know whether the test can identify persons with a certain condition.

Specificity - Specificity is also important. In contrast to sensitivity (which measures if persons with a certain condition are identified), specificity measures a test's accuracy in identifying people who do not have the condition.

Predictive Value - Predictive value is the ability to predict the presence of a condition. This is appropriate to the whole question of screening tests, for the predictive value of any test depends on the actual frequency of a condition in the population.

Predictive value

Test with 95% Sensitivity and 95% Specificity

Prevalence (%)	Predictive Value
1	16.1
2	21.2
5	50.0
10	67.9
15	77.0
20	82.6
25	86.4
50	95.0

Source: RS Galen, 1979

I thought the best way of illustrating predictive value would be to show data from the work of R S Galen in 1979. He was examining selection of appropriate laboratory tests. You can see quite clearly here how predictive value is affected by the prevalence in the particular community or sample population. You can see that once the prevalence goes below 50 per cent, you are starting to run into some difficulties by saying that you have a predictive test for your intended use (1). As you start getting down into very low percentages of prevalence, one might argue that that test would probably not be worth applying. The point is that the ability of pre-placement screening to identify low back injury or potential for low back injury, is very dependent on the question of the prevalence within the population. Unless a test is used for very specific circumstances, one should question whether that test should be used at all, particularly if there is a low prevalence of the condition that it is hoped will be detected in that population.

Pre-placement screening

Looking more generally at the question of pre-placement screening, one should have various criteria before deciding to embark on its use. We must look at questions of: Is the screening procedure safe? Is the screening procedure practical? I will not address the question: Is the screening procedure legal? But I think it is certainly a question one has to consider, particularly with some of the legislation in place in virtually all jurisdictions. The important aspect for today's workshop is the ability of that procedure to predict risk of future low back pain.

Pre-placement screening tests

This by no means is complete, but I chose to categorize pre-placement screening tests into these major categories: **Medical Examinations, Strength and Fitness Testing,** and **Job Rating Programs**. The purpose of any of these screening tests would be to identify people who were at **high risk** in terms of future

Pre-placement screening tests *continued*

susceptibility to back problems. Using the criteria that we identified on slide 3, I would like to go through the various types of tests that have been used to highlight some of the aspects I found interesting about them.

1. Medical Examinations

Medical Histories - Generally considered an important part of the screening medical history is the identification of previous back problems. There would be very low risk, probably none, associated with obtaining a medical history. It is practical and takes little additional effort. The one difficulty would be that the worker or potential employee may be reluctant to reveal previous problems.

The ability to predict risk is very important. A few studies have considered the risk of a recurrent attack of lower back pain as the reason for taking a medical history. There is a lot in the literature to suggest that there will be recurrence of low back pain, generally, within a three-month to three-year period of time.

From the prevention aspect, the question is whether that is sufficient by itself to warrant medical histories. Snook, Campanelli and Hart in 1978 found that simply obtaining a medical history for prior back pain was not enough to reduce back injury rates. They went on to advocate a more comprehensive approach which includes workplace changes and personnel training (2).

A **clinical physical examination** is a little more detailed and quite a lot more specific. The purpose of an examination would be to detect signs of dysfunction which would be indicative of future susceptibility to back problems. From a safety point of view, it can be generally considered free of risk. When we consider the criteria of practicality, it can be quite time consuming and costs can vary, particularly if there is a need for more extensive medical investigation. Its ability to predict risk is limited in that general observation of posture and ranges of motion do not seem to be reliable predictors.

Lloyd and Troup, in 1983, found five physical signs with significant predictive value; the one most often mentioned in the literature is the inability to sit-up from the spine--it could be an indicator of trunk flexor weakness. They have observed that when more than one of their physical signs were present, the risk of a recurrence of back pain increased (3).

In considering whether clinical physical examination should be used as a method for preventing future back problems one notes that anthropometric data and measurements of the range of motion often have limited value to the selection procedure. In fact, if a specific reach requirement is documented as being required for a particular job, it would be necessary to evaluate the applicant's

Pre-placement screening tests *continued*

capability in that respect. And, of course, one should always ask whether that job requirement should be, or could be, adjusted to conform to the applicant's range of motion.

There is a lot of interest in the literature on the question of **general fitness**. The purpose of having some measures of general fitness would be to identify individuals with a good state of overall health. The safety and practicality issues of this test seem to be very dependent on the type of procedure used. On the question of general fitness level as predictive of risk, Svensson and Andersson in 1983 found lower back pain to be more common in men who were physically less active in their leisure time (4). The difficulty with the implications of their study is that this relative inactivity could be a **result** of pre-existing back problems and not necessarily the cause of back problems.

In the preventive aspects of general fitness, the data of Cady et al in 1979, who looked at fire fighters in Los Angeles, are suggestive enough for people to feel that the general idea of encouraging virtually everyone in the population to upgrade their (own) general level of fitness would be warranted (5).

Routine X-Rays of the Lumbar Spine – I don't believe this screening procedure is used now. It was intended to be a non-invasive technique which might reveal a predisposition to back injury; the safety implications are the risk of repeated exposure to x-rays. One study that I frequently quote is that of Gibson et al, 1980, who looked at workers in the steel industry in Hamilton (6). It compared two groups of steel workers, one hired before and one hired after back x-rays were introduced. Low back x-ray screening did not significantly influence the subsequent incidence of low back pain.

2. Strength and Fitness Testing

Strength and fitness testing are in some ways tied in with the concepts of general fitness. The safety aspects of it are that one has to look for medical contraindications of strength testing. The practicality is that the technique requires specialized knowledge and expertise to establish and implement the programs correctly.

On the issue of whether they can predict risk, there is some epidemiological support that strength testing is a means of reducing back injury rates. In your package of background material, there are articles by Chaffin. In Chaffin's early work with Park in 1973 (7), and again in a longitudinal study in 1978 (8), it was clear that the risk was higher in the groups of workers who were overstressed. One would, perhaps, argue that this data makes a better case for redesigning the job than for using strength testing as a screening mechanism for workers.

Pre-placement screening tests *continued*

In its ability to prevent risk, I would also draw attention to the work of Dr Robert Norman, of the University of Waterloo, who is in the audience. It showed that standard isometric tests, particularly the standardized back and leg lifts, could not be related to the particular dynamic task examined (9). There is difficulty introducing any screening test if you know that it has no particular application to the job that you want done; that would conflict with some of the human rights provisions in this country.

3. Job Rating Programs

The third and major category is job rating programs. As an ergonomist, I found them quite interesting because they at least recognized and tried to get a match, or to evaluate the job as well as the worker. I couldn't find anything to suggest that job rating programs weren't safe. The practicality is that they treat all the employment groups equally, including those with physical handicaps. These programs can be quite time consuming since both the individual and the job are rated on a number of factors. One of the historical examples of this type of approach, was Koyl (10). You may have heard of the process he used that was called GULHEMP; G - general physique, U - evaluation of upper extremities, L - lower extremities, H - hearing, E - eyesight, M - mentality, and P - personality. Each category would be rated on a scale of one to seven. The cost of this particular approach would vary with the extent of testing. Hanman, 1951, was one of the pioneers of this type of approach; in proposing it he indicated that: a job analyst should evaluate the job; an industrial physician should be involved to evaluate the worker; and a placement officer was the individual best able to select a job most suited to the worker's abilities and skills (11). In looking at whether these types of tests could predict risk, I couldn't find much in the way of literature support. It is possible that the motivation for initiating this type of program was based more on requirements of government programs such as hiring of disabled workers, compensation, or aging workforce issues than on an attempt to predict risk. I wonder if we aren't going to be seeing some research and interest in this whole issue of job rating programs in terms of pay equity.

There is not much in the literature that documents these programs in terms of prevention. But I think you would agree that they could produce such benefits as a reduction in work-related injury and illness, and result in an increase in job performance and job satisfaction.

Preventive measures for back injuries

If you break preventive measures into primary (measures taken to prevent the injury or illness before it occurs), secondary (measures taken to stop the development of an injury, illness or

Preventive measures for back injuries *continued*

disease while it is in the early, asymptomatic stage) and tertiary (measures taken to minimize the consequences of a disease or injury once it has become clinically manifest), pre-placement testing does seem to capture the ergonomic perspective of trying to get the job to fit the worker rather than the worker to fit the job; but I consider it to be a secondary level of prevention of back injuries.

Lillian Vine

The next panelist, Dr Walter Spitzer, is Professor and Chairman Of the Department of Epidemiology and Biostatistics at McGill University in Montreal where he also holds the post of Professor of Medicine and is the Strathcona Professor of Preventive Medicine.

Dr Spitzer chaired a very important study in Quebec for the Quebec Research Institute on Safety and Health in the Workplace (IRSST) on backs. We have a copy of the report on display. Dr Spitzer is a highly reputable expert. You will find what he has to say important to this discussion.

Dr Walter Spitzer

I will very briefly try to summarize some of the main points and some aspects of activities stemming from the work of the Quebec Task Force on Spinal Disorders.

The Quebec Task Force on Spinal Disorders was established by the Quebec Institute on Safety and Health in the Workplace (IRSST) which is a research branch of the Quebec Workers' Compensation Board (CSST). The composition of the task force included methodologists, epidemiologists, biostatisticians, ergonomists and other experts in relevant fields as well as distinguished clinicians in orthopedics, neurosurgery, rheumatology, rehabilitation and medicine. I was privileged to chair the task force; we set it up for a year and ended up having to spend three years on the challenge. If I can just recite a brief paragraph to put the task force in context: "The basic approach of the task force would be to collect scientific findings relevant to clinical interventions and operational policies. Above all, the study was to avoid collecting opinions unsupported by valid scientific findings no matter how erudite or eminent the holder of these opinions; and without regard to the degree of acceptance of these opinions among professional groups or the general public. Areas lacking a scientific basis sufficient to support the making of a given clinical decision or the formulation of specific recommendations would be identified as a research priority" (12).

The long mandate of the task force would take me most of my ten minutes to read to you so I'll leave that for perusal of the report when you get it. We identified (the Canadian Centre helped us

Dr Walter Spitzer *continued*

with this as well as colleagues in the Ontario Ministry and other provincial ministries) 7,000 possible articles in the worldwide literature that might have something to do with the subject over the last 10 years—we were restricted to the prior 10 years. We selected 4,000 of those which were clearly relevant in English, French, Swedish or Spanish, the languages we could handle on the task force. After the preliminary screening we picked 721 articles for in-depth analysis. We rejected 252 as scientifically inadmissible and were left with 469 papers of which 84 were randomized or nonrandomized controlled trials, 116 cohort or case control studies, 157 descriptive studies and 112 reviews of the literature. Only the first 84 and the 116 short studies were a really strong basis on which to formulate any conclusions or recommendations.

In addition, we did our own study in a sample of the entire 1981 cohort of workers in Quebec (45,858 workers). In the sample studied 1.69% were related to the vertebral column, all three areas of the vertebral column, in one way or another. Of these, 1.37% resulted in time off work and .32% of injuries not requiring time off work. This is out of a totality of 2,700,000 active workers in the province of Quebec. 74% of those who have had at least one work injury in a one year period, if you follow them for four years, remit spontaneously within a month and the vast majority of those don't have recurrences.

We substantiated the Swedish experience that the majority of people with minor low back problems uncomplicated by observable neurological deficit or other organic observable deficit within three years, have no more episodes and they never come back again.

All of this brings in the issue—how much of this is malingering? Much less than most people believe. How do you identify malingering? The vast majority of workers in Canada, certainly in Quebec, don't seem to malinger. This is a difficult problem that isn't political or judgmental; it's a matter of clinical science. We should stay away from the innuendos because we have no evidence to impute such a judgment on the workforce in a scientific admissible way.

$150 million, or about 29% of the Quebec budget of the Workers' Compensation Board, in 1981, was devoted to direct medical costs and compensation for low back pain,. Only 7.4% of people with low back or vertebral column disorders whether it be bone or soft tissues, go on to have problems that last for six months or more as one follows them for four years. That 7.4% accounts for 75% of the $150 million. All of us concentrate a lot of resources on

Dr Walter Spitzer *continued*

the 93% and pay very little attention to the 7%. If you can cut that down to 3% in Quebec, you will have cut the budget by $75 million and that's not an unrealistic target.

What were some of the important contributions of our task force? First, we found that the classification of conditions related to spinal cord disorders and related disorders of tissues in the area, the clinical classifications in the literature were so confused, so incompatible from country to country and from medical centre to medical centre that they were unusable. One of the first things we did was to reclassify back disorders in a way that was clinically meaningful, occupationally sensible and having common sense. If we did nothing else, the new taxonomy is worthwhile because now we can look at the problem in clinical categories that make sense to the clinician, to the employer, to the worker and to the scientist. That also has to do with the reclassification of the therapeutic modalities linked to the objectives of therapy as opposed to the vested interest of the therapist who could be the orthopedic surgeon, the neurosurgeon, the physiotherapist or the chiropractor.

As I go over some of the clinical recommendations you will realize why I say that if there is a "villain in the piece" it is what we in the medical profession and the allied health professions are doing wrong with back disorders. On page 37 of the Report, there are some points that deserve emphasis.

Diagnosis can be guided by knowledge of the circumstances surrounding an injury and work-related risk factors implicated in the cause of this disorder. A clinical history and physical examination are usually sufficient to identify the majority of patients for whom a specific therapy is required. You don't need x-rays and you don't need tests for the majority of people with back pain especially if you have identified clinically that there are no objective signs. So there goes the vested interest of the radiology club. The more expensive radiological and especially the invasive interventions should be used with caution for people without observable verifiable clinical signs, if at all.

These are the observations from the epidemiology studies we did confirmed by the reasonably rigorous studies we saw in the literature. In general, the symptoms of acute pain of the lumbar, dorsal and cervical regions tend to remit spontaneously. There is no need for obligatory bed rest for low back pain without significant radiation. When it is prescribed, it usually should not be continued for more then two days for lumbar or seven days for cervical pain. There are randomized control trials that give evidence that prolonged bed rest affords no benefit beyond that of brief bed rest and can have deleterious affects.

Dr Walter Spitzer *continued*

Low back pain without an anatomic alteration objectively demonstrated is never an indication for spinal surgery. Surgery, including chemonucleolysis, is indicated in the treatment of activity-related spinal disorders only after conservative treatments have failed. Accordingly, a surgical intervention is indicated only in very exceptional circumstances. Beware of second surgery. Even if there's residual chronic pain, return to work is not contraindicated; return to work may indeed be therapeutic, assuming the work is not likely to aggravate the basic problem of increased pain.

I heard it said here "the focus of this workshop is prevention". We hardly know anything about prevention—we don't know what to do because we don't know the cause. Let's get scientific about it if we are really serious. The only thing we can do today, and this has to do with attainable benefits not attained, is to prevent people getting to the six-month threshold. When you get to six months, you're a clinical basket case; you're into chronic pain syndrome and you're likely to be crippled for life. Anything the physician, worker, employer, or the system can do to prevent the advancement to chronicity is a preventive measure for which we have scientific evidence.

Dr Wright, I apologize, but with respect to primary preventive activities, I don't see any evidence for any of that in your primary list. Even back school and rehabilitation may be suggestive but certainly not conclusive. That is not my opinion alone--it's the opinion of an interdisciplinary group that looked at this issue hard for three years scouring the world literature.

May I just quickly do a tour d'horizon of the various contributions that the various appropriate interveners in this field can have. First, the role of the professions, especially medicine and physiotherapy. Let's stop doing folklore. You know, I, myself had low back pain about eight to nine years ago. I know it's real, I know it feels real, I know it's disabling even if nothing objective can be found. I am the last one to reproach a worker with back pain, who, when nothing objective can be found is called a malingerer. I was essentially self-employed at the time I was having low back pain on two occasions, in Australia, and in Canada in the best hospital in the world—my hospital—the Montreal General Hospital. I got irresponsible treatment: bed rest in the hospital for nearly two weeks, would you believe?

We also see factory mills of physiotherapists running people through for months without any clear objectives of therapy, taking advantage of the worker, the system and the Workers' Compensation Boards. Let's get science into that scene. The thing that is most shameful is inappropriate attention to the consequences

Dr Walter Spitzer *continued*

of chronicity. If somebody comes in, you give him a prescription, sign the form, two weeks off work, and then you don't give him an appointment for two months. You don't arrange for an orthopedic surgeon or surgeon to see him. It's only because of these slips between the cup and the lip, the lack of diligence and attention, that the worker gets lost in the shuffle and doesn't get the proper, well-focused intervention on time and goes into chronicity. This laxness of the system is something we can do something about. And there are many investigations done and many surgical interventions done without any clinical, epidemiological or ergonomic justification.

In terms of management, I have a lot of trouble believing what I hear about what the Hamilton Civics does in terms of modification of work for the workers. I find when, in practising occupational health and primary medicine, you try to get employers to modify the work arrangement for a worker, no matter what is in the posters or the brochures, the employers won't do it—it costs too much money. They'd much rather have you sign the form that gets the patient off work. If the Hamilton Civics is doing it as you say, you're an honourable exception; I'll give you the benefit of the doubt. By and large, employers give lip service to an aggressive approach to re-enter the worker in the system with modified work patterns and it very seldom pans out.

When you are a clinician trying to send the worker back, there are all kinds of brick walls. There is almost a conspiracy of the employer with the clinician to stop the worker from returning to work. The French version of the Task Force Report was misinterpreted by workers and the unions in Quebec as being anti-worker. I have never had a chance to talk to a labour leader face to face about it—I'd like to. We tried to be very careful in our wording and not attack anyone—unlike what I am doing this morning. But it ended up sounding like we were punishing the worker by forcing him/her to go back to work when s/he is sick. What we were trying to say diplomatically is, "You people in the medical profession, let's get serious about how we deal with this in scientifically sound ways and let's not penalize the worker and let's get the employer involved in a conspiracy of rehabilitation rather than a conspiracy for chronicity".

I would propose, with respect to workers, that there has got to be more education about the costs and the benefits of the various approaches of rehabilitation, and improved perception of the purpose of what needs to be done sensibly from within. I invite you to be less suspicious of people like myself and the universities and others—there is no military/industrial/university plot to do in the worker with low back pain. At least, I'm not part of it. There are constructive approaches we can take. Let's remember that the

Dr Walter Spitzer *continued*

biggest damage is to the worker, the one that's allowed to go to the six month threshold of disability. The consequences after that are family disruption, psychiatric complications, depression, deterioration of social function and workers who are lost to the workforce for life. That's what we want to prevent; I know the unions and the workers also want to prevent that.

Coming back to management, I was really struck by the story of the four robots. One wishes that management only took as much care about its 10,000 workers (which are often considered disposable) as they do Mork and Mindy, Laverne and Shirley! If somebody took note to go out and see to the welfare of the "factors of production" which are more expensive and valuable than the Morks and Mindys, Lavernes and Shirleys, namely, human workers, we'd have fewer barriers to reentry into the workplace.

As far as the Workers' Compensation Boards, if there are any representatives here, I say that your data are useless for study of these problems. In the Quebec Workers' Compensation data bank material that went in the 1981 cohort, you know what we found as the totality of clinical information in about 30% of the records? "Back." That's all the clinical information you often get and part of the recommendations of the task force are about a new format of forms which a clinician must fill to be paid so that you can derive what's going on. As much as the ergonomic interventions make common sense and seem to be based in reasonable engineering scientific principles, there is no way to link what's going on without a proper record of the outcomes. The Workers' Compensation records on dollars and costs are detailed and are followed up well; people and a description of their health problem—that's another story!

Research priorities for the future with improved records? We must do cohort studies. A cohort study is when you follow workers into the future or you take them historically and follow them to the present. Historical cohorts are out of the question because of the mess of the Workers' Compensation Board poor quality of clinical records. We have to do concurrent cohorts forward to get a better predictive handle on who that 7% destined to chronicity is going to be at the outset. Those are the people we really need to help—that's a priority. It's a five-to-seven-year study. It's got to be started. We started talking about it five years ago; nobody funded it; we could have had it done by now. So let's start it somewhere: let's get two or three provincial Workers' Compensation Boards together and do it so we can have generalizable information.

We also would like, at least in Quebec, the opportunity to do a demonstration model of the recommendations made by the task force to enhance improved therapeutic intervention and

Dr Walter Spitzer *continued*

rehabilitation by the worker with back pain and to get a handle on all aspects of it including outcomes, costs as well as proper intervention of the various professions. It's a three-year study to cost between $1.5 and $2 million. You throw up your hands and ask how can it be so expensive? It has to be so expensive because it is so complex; but even so that's just 0.3% of the cost of low back pain in Quebec.

There are other studies that can be done. The only way we can do it in a way that's going to make a difference to society is if there is full participation at the design stage, at the execution stage, at the analysis/interpretation/diffusion stages; participation of the workers through their grass roots representatives and their institutions, employers, the Compensation Boards and scientists. I've done studies in environmental sciences where all sectors are involved; it's amazing the ideas about science that come from people who aren't scientists and how that improves a study. It's the only way to do it; without that community of participation, it's going to be a sterile study on the shelf.

The closing thought I leave with you is this: in low back pain, as you think of reentry into the workplace, there's a difference between hurt and harm. Sometimes, it hurts as you are going back to work, but it harms if you don't accept the hurt. The difference between harm and hurt is the point of departure for the educational programs that will bring workers into meaningful partnership to prevent the social scourge which is back pain in the workplace.

Lillian Vine

The next speaker is Linda Murray. I met Linda Murray when she was at the Manitoba Federation of Labour Occupational Health Clinic in Winnipeg. She is a physician who is totally committed to healthy and safe workplaces for workers. Linda is an American who's now back in Chicago. In the biographical notes I received from her office, there's a lot about many important achievements in Illinois and in Chicago, all of it noteworthy, but little of what she has done in Canada.

Labour invited Linda to represent it because of the faith of the Canadian labour movement in Linda's commitment to their cause. Her activities include technical resource for questions raised by local unions; development and presentation of educational materials on health and safety issues for union members; and more of the same. She has worked closely with labour in Canada and in the United States. Linda, it is our pleasure to have you with us today.

Dr Linda Murray

I believe this workshop format will provide us with a unique opportunity to discuss this important issue; I wish I were able to participate in the whole session.

There are advantages and disadvantages of speaking last. One advantage is that you can comment on other people's presentations and you can eliminate items from your presentation that have already been covered.

I think it's useful for you to be clear about the filter through which I see this question. First, I am a physician, an internist by training. I share with Dr Spitzer all the criticisms he makes about our profession and our ability to treat this disease; I share his concern for how the medical profession, including internists, has treated this problem. Unfortunately, this lack of logical and scientific approach or, more importantly, the failure to constantly reevaluate our therapeutic modalities with new information is not unique to back injuries. It is something that all of us, who want to be competent practicing clinicians, need to constantly remind ourselves of.

Secondly, I speak as a specialist in preventive medicine, specifically occupational safety and health. In my role as a professional in this field, with major responsibility for training US physicians to be specialists in this field, it is critical to look at this problem scientifically and separate what is fact and what is myth; that is an important process. It is also critical to do something about problems. I am a public health professional in the Chicago Department of Health; even though definitive studies have not been made on dioxins or carbon monoxide or low back injuries, I have to make decisions and regulations on a day to day basis for the benefits of the citizens of our city of some 3 million. One tries to do this with the best scientific evidence available at the time, and it's critical that one do so. But to not do, to not take action, to not try to put in place regulations to solve problems until the scientific studies are all in is worse than doing nothing.

Finally, I see this problem from the point of view of a worker. I work in what most studies claim is one of the highest risk industries for back problems—the health care industry. Working with other industries such as steel, mining, automobile, allows one to understand that each occupational group has specific risk factors and problems; it's important not to lump them all together. While the statistics are not good, it's probably important to remind ourselves what they are. In 1984, across Canada, 28% of all Workers' Compensation claims were for back injuries. In Canada, in 1984, the total lost time injuries for back problems was 136,000. In 1985, this rose to about 150,000. The average time lost for those injuries was 53 days. In this country that totals 7 million

Dr Linda Murray *continued*

lost days of work. There are over 8,000 workers in this country who are permanently disabled yearly from back problems. Good estimates of total costs are not available. A conservative estimate of direct costs for Canada, in the recent period, for back problems is three quarters of a billion dollars. Those statistics, in addition to being inaccurate, are underreported. In addition to not being very useful when lumped together, the statistics do not tell very much about different occupations. They are just numbers. And while it may only be 7% of the total number of workers, for certain occupations like nursing, orderlies, construction workers or roofing workers, the numbers get much higher.

It is important that we remember the human costs. We are talking about men and women who find their ability to engage in leisure activities interfered with. (And after all, don't we go to work everyday so we can then take part in leisure activities?) About routine tasks such as mopping the floor, doing the laundry, repairing the home which are hindered. And about men and women whose ability to earn a living in their chosen job is interfered with, is compromised and, in all too many circumstances, is eliminated. I do not have time nor do I think it's particularly relevant for this audience to debate the various therapeutic modalities, but I do agree with what Dr Spitzer said about the lack of scientific base. I do want to touch on the philosophical question about medical modalities. We historically think about back injury. In fact, the title of this workshop is "Workplace Back Injuries". It is true that a small percentage of injuries in this area are traditional traumatic injuries—you fall on the floor and break your back, the kind of trauma that we see in automobile accidents or other very dramatic situations, but that's not the norm. Most of the back problems that we are talking about today are not broken bones or severed spinal columns; they are far more subtle changes. As people on the panel have mentioned, they cannot be documented by objective science: no damage to a nerve can be measured, no change in the x-ray can be pointed to. As we learn more about the pathophysiology of the set of diseases affecting the spine, some things have become clear. I usually talk about this problem not as a back injury, but as a chronic disease process. I think it has much more in common with a chronic disease process than with a traumatic injury. In fact, the next CCOHS workshop on Repetitive Strain Injuries looks at that, not for backs but for other parts of the body. That is an important thing to understand; it's not that today, Thursday morning, I lift something and injure my back; this is a process that occurs over decades often in settings that place workers at high risk for acute strain, but also in a chronic process where a little change occurs on a day-to-day basis.

As an epidemiologist, it is critical to remember to look at subgroups. When Dr Spitzer talks about that 7%, that is an

Dr Linda Murray *continued*

important concept to understand. We have to look at specific occupations. The evidence in literature that certain occupations appear to be at a higher risk than others is overwhelming. We can quibble about how much, we can argue about odds, ratios and risks, but we cannot ignore that certain kinds of workers are at higher risk for this syndrome of chronic back disease and other musculoskeletal problems than others. For example, I know that more than 7% of the men who work for the municipal government as garbage collectors are going to have disability from back pain. I know that because of what they do—they lift tons of garbage every day. It's rare to find one that makes it to age 58 or 62 without some sort of back problem. In the health care industry, nurses, orderlies, x-ray technicians, people involved in moving and carrying patients are going to have extraordinarily high rates of back problems.

As a good epidemiologist it's important to look at the data from all view-points to better understand the problem. One thing is clear: this is a real and a serious problem with many implications of cost and productivity; those are not unimportant. But there are also indirect costs to society in terms of families, communities, inability to function, lives that are redirected, loss of esteem—real human impact. While we might not know all of the pathophysiology of this disease, or understand all the implications of a certain design on the back, we do know there is a problem.

The next question for any reasonable scientist is—what can we do about it? Some of the things have been outlined. In terms of screening, from my review of the literature and from my clinical experiences, I would say we have not developed a mechanism to screen effectively. More importantly, why do we want to screen? That is really the question. What are we screening for? If we are screening for some superhuman immune to low back injuries, elbow injuries and other injuries, who will function in any strangely designed environment, we're not going to find one. That does not mean that I am against efforts to look at what human factors place people at higher risk for injury. In fact, I think that research is critical; the question is what you do with the research. If the goal of the research is to try to figure out where the superhumans are, that's a waste of time. If the goal of the research is to figure out better ways to prevent this problem, that makes sense.

Training - it's very difficult for anyone in preventive medicine and public health to be against training - this is like motherhood and apple pie. But who are we training and why? The most important people to train are certainly not workers on the floor how to lift; some interesting studies in the literature indicate that experienced workers figure out the best and most efficient way to lift, given the horrible situation they are in. If you want to know

Dr Linda Murray *continued*

how to lift, find people that have been doing their job for 5, 8, 10 years and watch them—that's probably the most efficient way to do it. It's more important that we train supervisors, physicians, nurses, ergonomists, and such because we are the ones who know the least about that specific job and often make the most decisions about what those workers do. What do we train for? Not lifting techniques. We need to give everyone in this field some basic understanding of the broad multi-disciplinary field of ergonomics.

I want to say that I solemnly support preventive measures.

We have not appropriately designed studies to prove that good designs prevent back problems. That's because in this country, in North America and throughout the world, we have not made the appropriate design changes yet. It's hard to measure what we think may be more reasonable designs if, in fact, in most workplaces we haven't been able to put them in. In those settings where beginning studies are going on, often they are not published in the literature; they are in the early stages in Canada and even earlier stages in the United States; but in those plants that we have looked at there is some cause for encouragement. Regardless, we have an obligation; we cannot wait until all the facts are in and everything is known. I would argue that that's not going to happen in our lifetime anyway. We have an obligation to have a true scientific method. Which means that we sit down and look at the available evidence, craft some solutions that we think begin to move us in the right direction and then evaluate those design changes, task changes, regulations, and change them. Whatever we agree on today will not be what we think ought to be done in 1995 or in the year 2000. We should not be afraid to take the action that seems reasonable.

You have a unique and important opportunity that I hope you exercise with enthusiasm and with some understanding of the role that you can play. The critical issue for you in the next day and a half is how do we prevent back problems and other musculoskeletal problems even though we are focusing on backs? How do we prevent this repetitive injury? How do we minimize it? What do we do about it?

It is true that we know a great deal more today than we did 20 years ago about how these problems develop; and there is no question that we need more research. It is also true that in the opinion of most of us in the field, changes in design are the primary way this can be addressed. This is not easy; the details of the design are often tricky. Often we will redesign a job because there's a back problem and realize six months later that we've created a problem at the elbow. This is not always an easy straightforward task and often, more often than not, it takes several cycles of

Dr Linda Murray *continued*

looking at the problem, documenting what it is, trying to make some changes in design or work practices, reevaluating those changes and then making more changes. That is what science is about. That is how the scientific process goes forward.

Most of all, when one considers the economic, the social, the political, the human cost of this problem, it is necessary that we act together. Government action is called for. It is possible for government to act in a responsible and rational fashion. The time has long passed when we should have basic regulations and legislations about ergonomic designs. We know enough about basic principles to craft such regulations. We see them beginning to be developed in Scandinavia and other countries. There is no reason why regulations cannot happen in Canada. As human beings we tend not to take action unless we're forced to. That means that we have to look for government regulation that forces change in all workplaces, and not just the ones that have unions. Regulations must guarantee first and foremost that workers are not discriminated against; regulations that force workers who are less fit or workers who have already suffered some problems to lose pay or their jobs aren't going to work. The purpose of regulations is to protect human beings. We can begin to mandate basic design regulations and principles, not specific heights of tables. We can say that when putting in a new part of your process, from now on, you will do so on the basis of a joint health and safety committee that looks at design principles. These basic principles must be put in place. If we don't put it in place, if we do not move towards some sort of action, if we do not make sure that our provincial governments and the federal government mandate action on this, we will never have the basic data and information we need scientifically to ensure that we prevent occupationally-related back disease.

Questions and comments

Lillian Vine

Thank you very much to each of our panelists for excellent presentations.

You the participant now have the opportunity to address questions or comments to the panel. State your name each time you speak, and the name of the panelist you are addressing. Your questions?

Les Kovacsi - CUPE Local 43

I'd like to ask the panel to express an opinion, especially Dr Geoffrey Wright. One of the problems with back injuries is that the employers really don't want a back injury case returning to the job. If it wasn't for a collective agreement or a policy, they

Les Kovacsi *continued*

wouldn't have them return. We have a constant need to press both the employer and the provincial governments on the right of workers to previous employment and to accommodation by the employer. I'd like to ask the panel what they consider legitimate and reasonable in an act of legislation that will compel employers to take employees back?

Dr Geoffrey Wright

That question deserves discussion. It's not an issue that I would be able to comment on, but I certainly think it is one which requires positive suggestions coming from groups such as this workshop and through other routes.

Dr Robert Webb

Given the weakness of screening criteria and the human rights issues involved, it is difficult for the employer to demonstrate that it is impossible for the individual to perform that particular job after an injury. There are two sides to that question: first, to demonstrate that the criteria applied, namely that the previous injury prevents the worker from doing that work; secondly, there is a requirement on the employer, to make small accommodations for the employee, at a reasonable cost. The definition of small or reasonable is a matter that's going through the courts with different arbitration cases. That might be one area of investigation.

Brian Kohler - Energy & Chemical Workers' Union, Local 800

My question is for Dr Wright. You spoke at length on job rating programs whereby the individual and job are evaluated and an attempt is made to match the two. You then went on to state that although there was no documentation and very little literature to back up the validity of this approach, you felt it was valuable and you seem to be a proponent of it. My question is, aren't you uncomfortable that historically these types of programs have been used more often for discrimination than for improvement in the conditions of work?

Dr Geoffrey Wright

You put it in the right perspective because I talked about the historic basis for some of those tests. It's quite clear, in some of the articles, the concept is "here's a job and let's see if the worker matches the job". Why am I not uncomfortable? Because as an ergonomist, I suggest that the approach of job matching is consistent with the principles of ergonomics in the general sense. Clearly, there's a **need to assess the job**, that is, what is required to perform a particular job. There is also a hope that the worker's skills and

Dr Geoffrey Wright *continued*

concern about paralysis while waiting with unrealistic expectations for rigorous science.

Dr Robert Webb

I sense a misunderstanding of the nature of ergonomics. Ergonomics is a process. It's trying to build the workplace environment according to human factors criteria. We use the best knowledge available. The second part of ergonomics is to use scientific criteria to evaluate the effectiveness of intervention. It's a human factors engineering process involving diagnosis of the problem, review of the literature to find out what credible criteria are available, evaluation of the level of credibility of those criteria; where no credible criteria are in place, one has to do one's own project study. It's a matter of pulling from many disciplines to focus on particular cases. Ergonomics is trying to take generalities about populations—height, size, susceptibility to back injuries, strength, and apply them in particular cases; at the very least, you are going to have to verify that the individual case you are dealing with falls within the parameters of the scientific evidence available.

Dr Murray, in discussing training, said that we should target, not the people who have to deal with the symptoms or the outcomes of poor job design, but the people who design those jobs: the engineers, architects, executive managers who make the policies and put the processes into place. I agree, they are the people we need to educate more effectively in the process of ergonomics.

Dr Linda Murray

This is an important issue in occupational safety and health. It has to do with what one thinks the role of research is, which clearly is a political and philosophical question. In my opinion, the only purpose for science is to change the world; why else spend time and money looking at issues? But we must make a distinction between levels of scientific rigour—we cannot afford, nor is it necessary in my opinion, to design the appropriate epidemiological studies involving looking at a large number of people, and to have a number of different study designs for every single design change we want to make. One of the critical things about ergonomics is that we are trying to design workplaces for individualized situations, not only people, but situations. Do we really have to do a very careful study to realize that auto workers who were putting spare tires underneath a strange part of the trunk of a car were ruining their backs? Broad studies that look at basic principles are not going to be specific enough to tell you in this auto plant, in this hospital, in this nursing home, these are the kind of changes we need.

Dr Linda Murray *continued*

While research is critical, it is one part of the process. Another critical responsibility of those of us who are scientists, who understand epidemiology and understand epidemiological research which can often be misinterpreted, is to be clear. When we say that data is not there for certain things, that's true, but there's enough data there to know that we need to make some design changes. The chest x-ray example is a perfect example. Any physician could have told you that taking a chest x-ray is not going to prevent lung cancer. As a matter of fact, it's one of the risks for lung cancer depending on how many chest x-rays you take. We didn't have to wait for studies to come out. That was a misapplied notion that was faulty from the beginning.

Research and science are important and should not be a mystery. We ought to be able to explain it in common language to ordinary people; and if it doesn't make sense to them, then probably it's bad science. If scientists cannot explain what they are doing and why to intelligent people trying to understand, then the chances are overwhelming that we are talking about bad science. Science ought to be a catalyst and a tool for change, not an obstacle.

Dr Geoffrey Wright

The inclusion of ergonomic design of the workplace is a primary preventive measure. There is some support in the literature, particularly Snook's, Campenelli's and Hart's work, 1978 where they were able to show that by designing a workplace task so that it could be performed by 75% of the working population, they were able to substantially reduce the incidence of back injury in the workplace (2). That's the type of study which scientifically has a certain appeal. I don't want you to have the idea there is no scientific support for some of the intervention measures; at the same time, one has to be very careful not to blindly follow a particular procedure. One always and constantly has to be evaluating, substantiating and looking from different perspectives to make sure that there is that scientific validity that one might hope for.

Dr Robert Norman - University of Waterloo

I was happy to hear Dr Spitzer soften his comments when he responded to questions. I work in a scientific community; I'm sympathetic to the preventive approach. I thought you were implying, Dr Spitzer, leaving it exclusively in the hands of the medical community.

I'd like clarification; I think you said even if preventive measures reduce the number of visits to the Workers' Compensation Board we'll still have the 7% of the people who cost 75% of the cost

Dr Robert Norman *continued*

and therefore, if we are look at WCB costs, the best investment of money is in rehabilitation and getting those people back on the workplace floor. If that is correct, that scares me a little because that suggests much more research in rehabilitative techniques; and the people who are doing the rehabilitation by and large are physio and occupational therapists who have no formal education to do research.

Dr Walter Spitzer

Some things get distorted when you're trying to distill a lot of information. I wouldn't be in academic and preventive medicine if I didn't have a commitment to prevention as a key strategy in the improvement of the health of the population. Philosophically I am biased for prevention; on the other hand, not blind to the fact that even prevention can do harm if it's misplaced, done prematurely or misfocused.

I do believe that it is of importance and priority to explore the causes of back pain. We really don't know what causes the back pain that results in disability. What is the final chain of events of the mechanism that causes perception of pain that then leads to behaviour of disability? We just don't know. More work has to be done in that area to enable primary prevention. It is difficult; it's going to take time, and concurrent, perspective, cohort studies that allow us to predict and discriminate between those who are going to have relatively benign self-limiting disease and those that are going to go on to a chronic disease pattern. What I was trying to say is, while we are doing that which is going to take time, money, effort and collaboration and not jumping to conclusions quickly, let's get on with some of the things we can do that will be of benefit to the worker and to the population; let's concentrate on that percentage which now, largely due to mismanagement by the health professions, goes on to chronicity, often for reasons that would be avoidable if the system were working better and there were more adroit, efficient management of the problems in the early stages. We should be working on causes, working on identification of preventive measures that really work. I'm not that interested in reducing the number of visits to the Workers' Compensation Board; I'm interested in reducing the incidence of the problem, reducing duration per episode and keeping to a minimum the resulting disability.

In terms of outcomes in the population, the things that really matter are those that tell you whether a population of workers or a general population is better or worse off. For most of that, we're groping around. We must try to start focusing on certain issues. For some, we have suggestions on how to work together. If we can't make a touchdown, let's make a couple of first downs.

Lillian Vine

I think those were excellent words on which to end—let's work together. I invite you to join your group and do just that. I want to thank the panelists again, much too briefly, for an interesting, informative and certainly very stimulating presentation.

Workshop #1
Scope of the Problem and Pre-Selection

Workshop #2
Job Design and Workplace Design

Workshop #3
Prevention, Training, and Elimination or Limitation of Hazards

Management

Chairman: Paul Gray
Manager; Risk, Safety and Regulatory Affairs
Atomic Energy of Canada Limited; Radiochemical Company

Rapporteur: Michel Bellefleur
Woodlands Training Supervisor
Fraser Inc

We're going to start with workshop #2 because workshop #1 created a lot of contention within our group.

Workshop #2 Job design

We feel effective job design can only be accomplished through multi-disciplinary analysis which involves employees, joint health and safety committees, professionals, government, management, external resources, and others. We feel this multi-disciplinary approach is very important. The experience and expertise these groups all have to offer are vital to the establishment of an effective and accepted means of job design.

Workshop #3 Prevention, training and elimination or limitation of hazards

(a) **Are there effective universal lifting procedures?**

We said "no". However, using procedures such as keeping loads as close to the body as possible, knowing the weight beforehand, avoiding twisting, and observing/consulting employees doing their jobs to identify the best "tried and tested" method, could be components of a universal principle.

(b) **How do you determine appropriate procedures for specific jobs and specific workspace?**

We saw this question fitting in under workshop #2. This information is necessary in successfully designing the workplace.

(c) **What kind of training is required? Initially? As reinforcement? On introduction of new practices and equipment?**

Although training is secondary to ergonomic design which should be based on joint efforts, training should also be combined with job design to ensure the full picture is given. The combination of proper job design and training, will work to minimize back problems and back injuries. Training for workers should be specific for each job, so that details of the job and the job design are taught. More formalized training is needed for professionals, management, health and safety committees, supervisors, and others. Included

Prevention, training and elimination or limitation of harzards *continued*

in this formalized training should be general training for workers and supervisors on the back, proper lifting procedures (ie basic principles under (a)) and ergonomics.

(d) **Prevention Programs – What is known and done? What needs to be known and done?**

We emphasized the physical training program. Training should be secondary to job design or combined with it to try to prevent and reduce back injuries. We feel the two combined will have the greatest positive effect.

(e) **Are there ways to eliminate the hazards? Which hazards?**

We found that the best way to eliminate hazards was good job design, through a collaborative effort.

(f) **How do you deal with hazards which cannot be eliminated?**

If hazards cannot be eliminated, we suggested dealing with them through training and job rotation. Another point in our discussion involved reduced duration of exposure during the rotation, as well as other such administrative control measures. This is contingent upon no mechanical aids being applicable to the job.

(g) **Discuss weight restrictions as a way to eliminate or reduce injury.**

We said "no" to weight restrictions as a way to eliminate or reduce injury. We cannot stipulate restrictions; it's too vague and it's too dependent on the actual working/lifting situation (ie package shape and person).

Workshop #1

Scope of the problem and pre-selection

(a) **What is the scope of the problem?**

We think the scope of the problem is broad and that it involves both the internal and external workplace environments. The scope of the back problem, we feel, is underestimated and it ties in with sprains, strains and repetitive tasks. A better definition of disability is really needed.

(b) **How predictive are tests? How scientifically valid are they? Are they used to discriminate against certain workers?**

First, we felt pre-existing conditions which could make a person more susceptible to back injury can be identified through specific selective testing in, for example, pre-employment medical exams. Secondly, this screening would identify an obvious condition which could result in an injury to the person at home or at work under

Scope of the problem and pre-selection *continued*

simple, easy (for 95% of the population) lift conditions. Thirdly, a better definition of the terms "testing" and "screening" needs to be developed. This is important in that these terms will apply differently to "pre-employment" and "during employment" exams. Fourthly, further research is needed for development of predictive testing. This would require agreement to make sure that the types of testing and how the results are used are agreed to by all parties involved: labour, management, government and professionals. We strongly emphasize the need for this agreement and feel that testing/screening mechanisms which are so implemented will benefit those individuals who have failed to meet the minimum requirements (ie those most susceptible to back sprain/strain). This awareness will allow them to seek less stressful jobs where the risk to their (and their families') well-being is less threatened.

(c) **How are the results used? – To assist workers with training? To assist with job design or workplace design?**

Pre-selection can be a part of the process of preventing harm to the workers themselves and to others. But pre-selection is not always conducive to ergonomic correction; it must be secondary to workplace design and job design. If job design will minimize the risk to a high "back injury risk" worker to a point where s/he can effectively continue to do this job, the results would not be used against the worker. If job design can't have this effect, the worker should not be placed in that working environment for both personal and other workers' protection.

(d) **Can pre-selection be used to avoid or minimize workplace back injuries?**

Where there is an obvious physiological problem, valid pre-selection can be used to ensure that person is not harmed in that particular job (ie that person does not work in that job).

(e) **Does it lead to adaptive or discriminatory measures?**

It may, with an unscrupulous employer, lead to discriminatory measures toward the prospective employee with obvious disabilities; but we feel the potential of benefit is much greater to that person. There's no point in putting a high risk individual into a job where s/he will very likely suffer back pain/sprain/strain and ruin his/her own and the family's life. We agree that selective tests have very limited applications but feel they may be used to benefit in selected workplaces where careful development of validated tests is used to guide placement.

Lillian Vine

We agreed that we would leave the questions until after all the reports. Unless anybody from your group wants to add anything to that report, I think we should move right on to the professional group.

If I can sum up—the management group reported on question 1 last, because it found it probably the most difficult and contentious. Your other approaches were very much job oriented and very much oriented to joint endeavours.

Professionals

Chairman: Gwenn Roberts
Occupational Physiotherapy Consultant
Ergonomics Services
Health Care Occupational Health and Safety Association

Rapporteur: Gord Thomson
Technical Safety Supervisor
Ontario Hydro

In our discussion, we tended to address the theme of the workshop rather than the specific questions; that might be characteristic of the professional group.

Workshop #1 Scope of the problem and pre-selection

We identified a number of elements which we thought should be contained in the scope of a back care program; the first one was to realize that the problem occurs off as well as on the job, and that we have to address the problem of the aging workforce and the sedentary life-style of the twentieth century.

We also must address the problem of reporting injuries; older workers especially have a tendency to suffer with their problems rather than bring them out into the open. This raised questions as to the accuracy of present statistics in trying to quantify the problem. We are not getting all instances of injury reported, and addressing the back issue alone tends to ignore the other instances of musculoskeletal and repetitive strain injuries.

We must search for the true cause of the problem, recognizing that back injury is not necessarily a discrete event; one twist of the back often is not what resulted in the problem. It goes back to the concept of back injury being a chronic problem, focusing on the chronicity of the problem, and getting to those 7.5% of the workers to prevent them from becoming chronically disabled. Addressing modified work was an issue that was raised time and time again throughout our discussion as was the ability of the health

	Scope of the problem and pre-selection *continued*	care system to respond to the back care issues. This particular statement reflects a lot of the frustration many of the health care people felt. We must, of course, consider the design of the workplace and the application of ergonomics. On pre-selection, or the term we prefer "pre-placement assessment", we all agreed that there was a potential for discrimination. We could see a use in limited situations, but we would have to be very specific as to which situations. For example, we stated that the selection of the appropriate job for a severely handicapped person might necessitate some sort of pre-placement testing. We stated that medical history could be used as a basis to direct employees to a corporate back care program. Pre-selection or pre-placement assessment really only presents a snapshot of a prospective employee's back health and therefore, cannot be used as a predictive tool. But pre-placement assessment with a task analysis component might have some benefits in identifying poorly-designed jobs.
Workshop #2	Job design and workplace design	Job and workplace design as in ergonomic analysis, is essential in the workplace, and this analysis must be done in a consultative manner; there must be input between labour, supervisors, management and the professionals. There is a need for ergonomic training for workers, managers and supervisors to make them aware of the concept of ergonomics; any approach towards a solution of back problems in the workforce must be by an interdisciplinary team of health care professionals, engineers, labour and management. There was a suggestion to have engineers or professional staff participating on joint health and safety committees, but only as a resource. We strongly emphasized the need for employee input in workplace design and the importance in job organization of pauses and breaks. We thought the behavioural aspects of the workplace to be very very important; interpersonal relations in the workplace also must be considered. Finally, we emphasized the need for training on ergonomics for all engineering disciplines and health care professionals during their university training programs.
Workshop #3	Prevention, training, and elimination or limitation of hazards	We discussed this extensively and came up with a few points. On legislation of workload limits, we tended to agree that if there was to be such a thing, although we couldn't get a consensus that this was the solution, we should ensure that any legislation has the benefit of the application of scientific principles; any limitations legislated must be based on scientific principles. What was more acceptable was legislation on ergonomic assessments in the workforce: for example, ergonomic analysis before introduction of any new equipment.

	Prevention, training, and elimination or limitation of hazards *continued*	On prevention, we discussed education on ergonomics, job skills and fitness in the workplace, attitudes of the workplace and a need to evaluate the affectiveness of current and proposed training programs.
Workshop process		We agreed that there is a need for a workshop on modified work; this was a topic which was brought up throughout our discussion—designing modified work and ensuring that modified work is available to injured employees. We would suggest that the workshop questions could have been worded to provide more guidance to discussion, the questions could have been more open. And the workshop format perhaps could have been described a little better in the introductory material. **Lillian Vine** I thank you very much and assure you that we will look at what we consider constructive criticisms of the workshop. If you would like us to do a workshop on modified work, ask us; we will be delighted to respond. To sum up your points quickly: the professional group agreed on the importance of appropriate job design and of joint responsibility for doing the design. You didn't find the issue of testing quite as controversial as the first group did because you applied it in a quite different way: to fit the job to the worker and as one element to better design of the job and the workplace.
Labour		**Chairman: Colin Lambert** National Director, Health and Safety Canadian Union of Public Employees **Rapporteur: Colin Lambert** First of all, I'd like to thank Gord Statham for taking the notes during our session this morning. We tried to follow through in the order that was laid out in the agenda.
Workshop #1	Scope of the problem and pre-selection	WCB figures do identify the huge scope of the problem, but they only represent a partial description of the problem. There is, in fact, a tremendous underreporting; for example, WCB figures only report the accepted cases. Many of those workers who put in claims

Scope of the problem and pre-selection *continued*

have them rejected. Hence, it is common practice for many workers, rather than go through the onerous WCB procedure, to use their sick leave provisions. I know, particularly in the health care field, that sick leave is an easier way to go. Many older workers who suffer recurrences of injuries are often rejected by the Workers' Compensation Board; so they will not put in claims for a recurrence but learn to live with pain. It all adds up to tremendous underreporting of the problem.

We spent a lot of time discussing pre-selection testing; we felt it to have little practical value. It also created the potential for discrimination. Let me give you an example of what we know is common practice of a written history to ask the question "have you had a compensation claim for back injuries?" If you answer yes, it almost always automatically disqualifies you from a job. We feel that the small value of pre-selection is vastly outweighed by the potential for discrimination. Nor do we feel that it is ever related to prevention, though we see that in the area of rehabilitation some testing probably has to be done to assess whether further injury will result from the job assigned.

We believe that all workers who are injured on the job should have a legislated right to continued employment; the practice of disallowing employment because of workplace injuries should not continue. People who return to the workplace expecting to recover might work on modified time or modified jobs; all people who return with permanent disabilities should be fitted with jobs that will not cause them further harm. The jobs must suit the capabilities of the employee and an analysis of those capabilities and job requirements must be conducted to ensure there will be no harm.

Workshop #2

Job design and workplace design

We discussed workplace design and workplace organization as being inter-related. There is no advantage to looking at one without analyzing the other. Job analysis has to identify the risk; that should be its main reason for being. It should identify the procedures, the actual organization of the work, the changes required, the proper work practices, staff levels. It should examine the effects of job incentives; it should include a scrutiny of purchasing policies, education and training. We felt that it would be unsuccessful unless there was full bipartite involvement and advice and assistance of professionals.

Workshop #3

Prevention, training, and elimination or limitation of hazards

We felt there is no universal lifting technique, and, in our opinion, the reliance on proper lifting techniques has been and continues to be a barrier to the proper discussion of the hazards. The same is true of fitness programs. It is vastly unfair to workers to make super-fitness a requirement of the job when that isn't required for

Prevention, training, and elimination or limitation of hazards *continued*

the general public. While labour obviously believes that fitness is an admirable quality in life, it is a social and not a workplace requirement. Any fitness program should be voluntary.

Education/training should be more encompassing than it is and include lifting techniques that reflect the specific jobs that need to be done. It should also take into account job procedures, ergonomic requirements and the results of any workplace analysis so there's an understanding of why things are done the way they are. We emphasize that any workplace analysis has to be bipartite with professional advice.

In prevention, we discussed at length what we believed would encourage action, and not just words on paper. We believe out of this workshop should come some action. Our past experience has shown that while there are a number of very good employers in the workplace who have the welfare of their employees at heart and who will embrace a program, that's not the universal experience. It certainly is not the experience in many of the unorganized workplaces. There is no compulsion on unorganized workplaces to implement any sort of controls.

We believe the way to ensure that action occurs is to have specific regulations passed. We believe that regulations must require an analysis of workplace design for ergonomic controls; they must cover educational and training requirements; proper job analysis to identify and reduce exposure; and modification of work sites when hazards are identified. To ensure workplace action we believe there must be a target that employers have to meet. We believe that both a maximum allowable weight limit and a daily maximum weight limit must be established to correct the dramatic problems of lifting overly heavy weights and to try to prevent the repetitive, ongoing, chronic diseases that result.

We believe labelling must be established. Workers must know what an object weighs. We believe there should be a standardizing of packages, wherever possible, based on ergonomic principles so that they don't cause hazards. We believe that all future jobs, future buildings and future work sites should be designed with ergonomic requirements built right in. We believe that present jobs must be analyzed to reduce as far as possible the hazards inherent in those jobs. As an example, we would like to refer you to the fire code that is updated periodically; what is required is that from a certain time in the future all buildings have to meet the building code requirements, and any buildings that are modified after those requirements come into effect have to meet the requirements of the code for that modification; it doesn't place the onus on everyone all of a sudden to meet the codes. We think that is a reasonable way to look at it.

Lillian Vine

The labour group was not in the least bit equivocal about the pre-selection testing. Their answer was that it has little practical use and leads to discrimination. Their emphasis too is on job design as a joint approach--of labour and management--with strong advisory participation of professionals. There was strong emphasis on regulations.

I would like now to introduce Martin O'Connell, Chairman of the Centre's tripartite Council of Governors, who has now joined us, having just returned from overseas. He is, as is the Council of Governors, very supportive and enthusiastic about this workshop process.

The floor is open for questions and discussions.

Questions and comments

Doug Morrison - Medical Officer, Stelco

I wanted Colin to elaborate on what he meant by testing for rehabilitation purposes.

Colin Lambert

The discussion was about people who were recovering back into the workplace, on a recommended program which might be limited time—two or three days a week on their normal job, or it might be shuffling paper so they can get back into the workplace. Those programs are fairly common; as is the problem of having permanently disabled people back into the workplace. The physical testing that's done on those people must be matched to the requirements of the job to determine that no harm will occur or to determine whether jobs need to be modified to accommodate them. It's a testing of the skill requirements of the job and whether the workers meet the skill requirements of the job. Instead of saying "you're 50% disabled, you can't do this job—out"; it says "we know you're 50% disabled, these are the limitations of what you can do; now we have to fit the job to your requirements".

Doug Morrison

Can I encourage you to send your comments to the Compensation Board because I've written a letter about that exact point. They have refused to allow or do it. So we have a problem.

Dr Ken Craven - Staff Physician, Ontario Hydro

I'm surprised how much agreement there was between our group and Colin's group. As physicians, I think we will probably be asked

Dr Ken Craven *continued*

to decide when harm is being caused. I'd like to point out that it was raised by two of the doctors yesterday morning that it's extraordinarily difficult to demonstrate harm and to measure harm. We can find out about hurt quite easily by asking a worker in pain; it's very difficult to design something to ensure that there is no harm when we don't know how to measure it.

Colin Lambert

I'd like to make a point. Dr Webb put the cart before the horse in suggesting testing people without first doing a full analysis of the job. There's no sense in testing someone's capabilities if you don't know what are the full job requirements and the hazards inherent in that job.

Paul Gray

Just a point from the management group too, to show that there was consistency amongst the three groups during these discussions. Within the management group the priority on all our minds was that the workplace or the job specifically has to be designed and has to be evaluated to identify the hazards associated with it. It is only after that analysis that any of the other actions can take place. Obviously, where it is possible, the workplace should be designed or the job should be designed to minimize any associated risk or any hazard to an individual or group of individuals.

There has to be a better definition of the terms screening and testing. I think testing was identified as being a procedure that has not yet been fully or scientifically validated; it is not successful enough in our minds to be implemented. We were talking about screening in a way I think is consistent with the other groups: to minimize potential harm to a potential employee or to an existing employee wanting to move into another position. It's a matter of identifying obvious problems. If a person with a condition that obviously would result in a personal injury or to an operation of that job unsafe to others, did get the job or want to take the job, then certainly the guidance for that person would be away from that job. I don't see that position of the management group as being far off the discussions and decisions of the other two groups.

Robert Bouchard

(Translated from French)

It seems to me the management group did not consider legislation as a means to bring all employers to ergonomic interventions and to correct problems of the workplace.

Michel Bellefleur

(Translated from French)

In general, we support regulations which would benefit all business, large and small, because all employees are equally important.

Lillian Vine

The question was asked of management why did they not put any emphasis on legislation or regulation. Michel's answer is that they did—in terms of good design and good practices, jointly determined, as applicable to the small business as it is to the large and unionized shop. But there was perhaps less emphasis on legislation by the management group than by the others.

Michel Bellefleur

We did discuss it, but it wasn't officially put in our report. One of our concerns was to make sure that the regulations applied to everybody.

Brad Donaldson - Safety Engineer, Northern Telecom

I would like to put forth a recommendation to the Centre. I'm not sure what your power to influence governments is. We've all talked about the need for good job design; very few engineering curricula provide the material to do good job design. We agree that job design is necessary, but we are not producing the professionals with the capabilities to do so. So whatever power you have, I would ask that you use it to influence the academic institutions to start incorporating job design not only for their engineering groups but also for the medical profession, and within business schools so that management has full and proper understanding of the need for design in business plans.

Lillian Vine

Thank you very much. That question was addressed to the Centre not to any of the chairmen, so that gives me a very good opportunity to turn the meeting over to our President, Gordon Atherley, and to the Chairman of our Council, Martin O'Connell. We are going to ask Martin to react, but I want to call on Gordon first to take the rest of this meeting and to answer your specific question.

Gordon Atherley

I'd like just to deal with the specific question about what power we have to influence government, academe, or indeed anybody else. We have no legal power whatsoever. But I think we have a growing influence thanks to our tripartite Council and also thanks

Gordon Atherley *continued*

to the process that's been going on these past two days. The recommendation that you've just made will be embodied in the document which will come out of this workshop; we can raise the question with the academic community of whether they would find a workshop useful among themselves to start getting their thoughts clearer about how to do this. Drawing on my own experience in academia, I expect the answer always is "that's a terrific idea but how do we make room in a crowded curriculum for the math, calculus, and so on, that everybody has got to learn in an engineering course?". But getting the academics into a forum like this might be the way in which they could do the give-and-take needed to squeeze in these new multi-disciplinary dimensions. I would particularly think of professors working in such fields as ergonomics, kinesiology, coming together to try to impart some thrust to that movement in the way that you've imparted thrust to the movement to do something about the back problem. It was a Council initiative that led to this workshop and I would now like to draw Martin in to respond on behalf of Council.

Martin O'Connell

The Council is a tripartite body. On it sit 16 civil servants, often, the directors-general or the assistant deputy-ministers of occupational health and safety. On it also sit 11 Governors nominated by the labour unions in Canada, and 11 Governors nominated by organizations representing employers. So, when the question is asked: what sort of power do we have?—the answer is, none, in the statutory sense, but a great deal because it's your power, to the extent that you put power into the discussions you hold, and that comes with the degree of consensus you reach.

If you, the three parties agree: labour, management and government, and I include the scientists and the professionals such as engineers or hygienists, physicians, if you have been able to come to some agreement there is a great deal of power there. We would be misleading you if we led you to believe that the Centre could exercise that power on your behalf; we haven't the authority to do that. But the publication that records the agreements you have reached, and identifies areas that have not yet been agreed, is a document for you to use to involve wider groups focused on some of these issues; that will increase the authority of the process. The ball is back in your court to carry the consensus into action; you have to see us as your resource.

You can imagine with what enthusiasm a tripartite Council responds to workshop requests coming from bodies like this who have come together to create something. We would wish to respond as we did unanimously to this request to say to the Centre "yes, let's do that workshop". In this case, it was requested by labour. Some

Martin O'Connell *continued*

are requested by management; some are requested by professionals; some by government who want to get some feedback. So, approach us, in your own constituency or with other stakeholders jointly; we will do what we can to help you reach consensus and therefore, a greater ability to pressure the system in the direction we all want it to go.

We have an extraordinary information resource available at the Centre created by 130 or so professional and scientific people on the leading edge of electronic technology. We are a major national resource, but we need the power of the input that you give it. You have to build that Centre to enable it to help you to go out and improve the system.

I want to say on behalf of the Council, how much we appreciate the leadership given by Gordon Atherley, President of the Centre, and by Lillian in organizing and conducting these workshops, but most of all the gratitude which the Council wants to express to you for requesting it, for doing it, for coming up with results and for using your agreements to bring about those improvements. Thank you.

Concluding remarks

Gordon Atherley

Thank you Martin. I'm just going to underline what happens next in this process because it's not finished. We are going to transcribe the tape. We're going to ask the chairmen of the groups to review the document, to make sure this is a record of what was said, what was agreed and what observations were made. Then as quickly as our process will allow us, we print it. We send you all a copy and after that it's again back in your hands. The document is strong to the extent that you have achieved consensus on some pretty important things.

It's a very interesting comment that the professionals, the physicians, were saying that they weren't far from what the labour group had been saying. That means that you can use the document to say there's a broad measure of agreement on these points; you're not pretending to agree on absolutely everything, but there are many points on which you have found common ground. That means that the power of the document is not just the power of the professionals or labour or management; it's the combined power of you all. It's what you do with it next that really will bring the action.

If I can use a word that gets used a lot but people in my position are not supposed to use, I think what it comes to is lobbying. You

Gordon Atherley *continued*

all have associations, you're all involved in the life of occupational health and safety, the structure of your organizations. When you read the document, it evokes the memory of the discussion. That will give you, I hope, the stimulus to go out and do something with it.

If between now and the magic date when we get this out, you have further thought on either the documents or the discussion, don't hesitate to communicate. This isn't an absolute process by which all further discussion is closed.

As to the workshop process itself, I take your comments very seriously. We want the workshop program to succeed; the questions must help your discussions. We're steering between, on the one hand, appearing to tell you what to think or steering you to rubber stamp the conclusion we want to reach. That's an extreme that would be unacceptable. On the other hand, we can be too telegraphic and we can be phrasing the questions in such a way that the answers are simply yes or no. That's no good either. Colin and Lillian worked extremely hard getting these questions together, but I propose we have a bit of a postmortem and review the questions in the light of the discussion to see whether we can apply the observations you have made to the next workshop.

The question of more explanation is very interesting. The process is unusual and we don't quite make clear enough how unusual it is. We'll work on it. I hope that people will come to know what a CCOHS workshop is and realize that it's something a bit different from a scientific conference or seminar, but something in which they find much value.

We heard your suggestion for workshops, but I have to say we don't act on them unless you tell us to. If you feel we should go with it call or write Lillian or me and say you think we should go ahead. What we would do is discuss it with you, prepare a proposal to the Council's Executive Board, evolve it in the way that Colin and Lillian have evolved this one.

This has been a very important occasion, again, in the life of the Centre. The pressure you will bring to bear, not on the backs of unfortunate people in the workplace, but on the backs of the people who make the decisions about the way occupational health and safety advances in Canada, will move us from this point, will enable you to look back on this session as a turning point in the natural history of a very unfortunate set of diseases associated with problems of backs, muscles and spines.

I would like to thank you very much, everyone of you, for making this the success that I believe it's been.

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